

10/574410

EV793649130US

AP20 Rec'd PCT/PTO 31 MAR 2006

PATENT

Atty. Docket No. 20008/G012B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

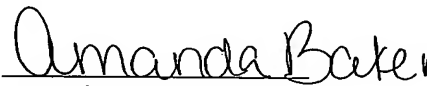
Applicants:
R.R. Donnelley and Sons Company et al.

Serial No.:
PCT/US2004/032413

International Filing Date:
October 1, 2004

For:
METHODS AND APPARATUS TO
DELIVER INK TO A PRINTING
SYSTEM

) I hereby certify that this paper is
) being deposited with the United
) States Postal Service on **September**
) **29, 2005**, in an envelope addressed
) to: Mail Stop PCT, Commissioner
) for Patents, P.O. Box 1450,
) Alexandria, Virginia 22313-1450
) utilizing the "Express Mail Post
) Office to Addressee" service of the
) United States Postal Service under
) Mailing Label No. **EV 793649130**
) **US.**

)
) 
)
) Amanda Baker

ARTICLE 34 AMENDMENT

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the written opinion mailed June 29, 2005, the applicants have submitted herewith five substitute sheets, pages 12-16 of the above-referenced international application, that have been amended pursuant to Article 34 of the Patent Cooperation Treaty. According to the amendments, claims 1-7 have been canceled and new claims 1-20 (pages 12-16) have been substituted therefor. Support for the amendments may be found throughout the above-referenced international application. It is respectfully submitted that no new matter has been included. In addition, a substitute abstract page (page 17) is submitted herewith. Please consider the following remarks in connection with the claims as amended under

Article 34.

Now turning to the claims, the written opinion relies on Warner (U.S. Patent No. 4,388,864) as establishing a lack of novelty or a lack of inventive step with respect to all of the originally filed claims (claims 1-7). Although the applicants do not concede that the cited art teaches or suggests the subject matter recited in the originally filed claims, the applicants have amended independent claim 1 and claims 2-7 dependent thereon to clarify the scope of protection sought. The applicants respectfully submit that the cited art does not teach or suggest receiving flow rate values indicative of the flow rates of the constituent components of press ready ink and setting flow devices to deliver the constituent components at a defined rate of flow based on the received flow rate values, as recited in claim 1. Accordingly, claim 1 and all claims depending therefrom meet the novelty and inventive step requirements, and an IPER indicating the same is respectfully requested.

Independent claim 8 is directed to a method directed to delivering ink to a printing system and recites, *inter alia*, receiving a first flow rate value associated with a first constituent component and a second flow rate value associated with a second constituent component and setting first and second pumps to deliver the constituent components at rates of flow based on the first and second flow rate values. The applicants respectfully submit that the cited art does not teach or suggest receiving a first flow rate value associated with a first constituent component and a second flow rate value associated with a second constituent component and setting first and second pumps to deliver the constituent components at rates of flow based on the first and second flow rate value, as recited in claim 8. Accordingly, claim 8 and all claims depending therefrom meet the novelty and inventive step requirements, and an international preliminary examination report (IPER) indicating the same is respectfully requested.

Independent claim 12 is directed to a method claim of delivering ink to a printing

IAP20 Rec'd PCT/PTO 31 MAR 2006

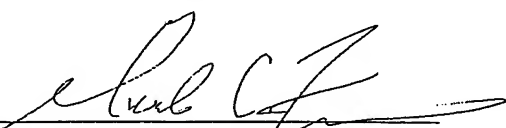
system and recites, *inter alia*, measuring flow rates of constituent components of a press ready ink and setting flow control valves to deliver the constituent components at rates of flow based on the measured flow rates, as recited in claim 12. Accordingly, claim 12 and all claims depending therefrom meet the novelty and inventive step requirements, and an IPER indicating the same is respectfully requested.

Independent claim 16 is directed to a system to deliver ink to a printing system and recites, *inter alia*, first and second flow control devices to control the rates of flow of first and second constituent components of press ready ink based on first and second flow rate values. The applicants respectfully submit that the cited art does not teach or suggest first and second flow control devices to control the rates of flow of first and second constituent components of press ready ink based on first and second flow rate values, as recited in claim 16. Accordingly, claim 16 and all claims depending therefrom meet the novelty and inventive step requirements, and an IPER indicating the same is respectfully requested.

In view of the foregoing, issuance of an IPER identifying all claims as patentable is earnestly solicited.

R.R. Donnelley and Sons Company et al.

September 29, 2005

By 
Mark C. Zimmerman, Agent
HANLEY, FLIGHT, & ZIMMERMAN, LLC.
Suite 4220
20 North Wacker Drive
Chicago, Illinois 60606
(312) 580-1020

(SUBSTITUTE SHEET)

PATENT

Docket No. 20008/G012B

1. A method of delivering ink to a printing system, the method comprising:
 - delivering one or more constituent components of press ready ink from separate storage containers toward an ink well;
 - receiving flow rate values indicative of the flow rates of the constituent components of the press ready ink;
 - setting flow devices to deliver the constituent components at a defined rate of flow based on the received flow rate values;
 - mixing the constituent components into press ready ink in-line during delivery of the constituent components from the storage containers to the ink well; and
 - receiving the press ready ink in the ink well.
2. A method as defined in claim 1, further comprising adjusting the rates of flow of the constituent components via the flow devices based on the level of the press ready ink in the ink well.
3. A method as defined in claim 2, wherein the flow devices increase the rates of flow of the constituent components if the level of the press ready ink in the ink well is too low.
4. A method as defined in claim 1, wherein one or more sensors read the flow rates of the constituent components of the press ready ink.
5. A method as defined in claim 4, wherein the flow rates of the constituent components are adjusted based on the flow rates read by the sensors.

6. A method as defined in claim 1, wherein receiving the flow rate values indicative of the flow rates of the constituent components of the press ready ink comprises receiving at least a portion of a press ready ink recipe specifying the flow rate values.
7. A method as defined in claim 1, wherein the flow devices are variable flow pumps.
8. A method of delivering ink to a printing system, the method comprising:
- delivering at least two constituent components of press ready ink toward an ink well;
 - receiving a first flow rate value associated with the first constituent component and a second flow rate value associated with the second constituent component;
 - setting first and second pumps to deliver the constituent components at rates of flow based on the first and second flow rate values; and
 - receiving the press ready ink in an ink well.
9. A method as defined in claim 8, wherein receiving the first and second flow rate values comprises receiving at least a portion of a press ready ink recipe specifying the first and second flow rate values.
10. A method as defined in claim 8, further comprising setting the first and second pumps to deliver the constituent components at a rate of flow based on a level of press ready ink in the ink well.

11. A method as defined in claim 10, wherein delivering the at least two constituent components of the press ready ink toward the ink well comprises delivering the at least two constituent components to an in-line mixing structure, wherein the in-line mixing structure creates the press ready ink by mixing the constituent components.
12. A method of delivering ink to a printing system, the method comprising:
- delivering a plurality of constituent components of press ready ink toward an ink well;
 - measuring flow rates of the constituent components;
 - setting flow control valves to deliver the constituent components at rates of flow based on the measured flow rates;
 - mixing the constituent components into press ready ink in-line during delivery of the constituent components; and
 - collecting the press ready ink in the ink well.
13. A method as defined in claim 12, wherein delivering the plurality of constituent components comprises delivering the plurality of constituent components to a mixing structure to mix the constituent components into the press ready ink.
14. A method as defined in claim 13, wherein measuring the flow rates of the constituent components includes measuring the flow rates during delivery of the plurality of constituent components before the constituent components reach the mixing structure.
15. A method as defined in claim 12, further comprising setting the flow control valves to deliver the constituent components at rates of flow based on a level of press ready ink in the ink well.

16. A system to deliver ink to a printing system, the system comprising:
- an in-line mixing structure to receive at least first and second constituent components of press ready ink and mix the first and second constituent components to make the press ready ink;
 - a first flow control device coupled between a first storage container and the mixing structure to control the rate of flow of the first constituent component of the press ready ink between the first storage container and the mixing structure based on a first flow rate value of the first constituent component;
 - a second flow control device coupled between a second storage container and the mixing structure to control the rate of flow of the second constituent component of the press ready ink between the second storage container and the mixing structure based on a second flow rate value of the second constituent component; and
 - an ink well coupled to the mixing structure to receive the press ready ink from the mixing structure.
17. A system as defined in claim 16, further comprising first and second sensors coupled between the first and second storage containers and the mixing structure to measure flow rates of the first and second components.
18. A system as defined in claim 16, further comprising a control device to adjust the first and second flow control devices based on the first and second flow rate values to change the rates of flow of the constituent components.
19. A system as defined in claim 18, wherein the first and second flow rate values are specified in a press ready ink recipe, and wherein the control device receives at least a portion of the press ready ink recipe.

20. A system as defined in claim 16, wherein the first and second flow control devices are pumps.

METHODS AND APPARATUS TO DELIVER INK TO PRINTING SYSTEMS

ABSTRACT

Methods and apparatus to deliver ink to printing systems are disclosed. An example method involves delivering one or more constituent components of press ready ink from separate storage containers toward an ink well. Flow rate values indicative of the flow rates of the constituent components of press ready ink are then received. Flow devices are then set to deliver the constituent components at a defined rate of flow based on the received flow rate values. The constituent components are then mixed into press ready ink in-line during delivery of the constituent components from the storage containers to the ink well. The press ready ink is then received in the ink well.